

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

*AMENDMENTS TO THE CLAIMS*

This listing of claims will replace all prior versions, and listings, of claims in the application.

*Listing of Claims*

Claim 1 (currently amended): A reduced seed-oil content plant cell ~~that expresses comprising~~ a seed-oil suppressing gene under control of a plant-active promoter, wherein ~~said a~~ plant ~~comprising said plant cells and expressing said seed-oil suppressing gene~~ exhibits a reduction in seed-oil and a concomitant increase in plant carbohydrate, protein or both and wherein said seed-oil suppressing gene is selected from the group consisting of a mutant allele of a gene naturally occurring in said plant and a transgene.

Claim 2 (currently amended): A reduced seed-oil content plant cell of claim 1, which is selected from the group consisting of cotton, corn, soybean, ~~canola~~ *B. napus, B. rapa, B. juncea* and wheat.

Claim 3 (original): A reduced seed-oil content plant cell of claim 2, which is a cotton plant cell.

Claim 4 (currently amended): A reduced seed-oil content plant which comprises ~~a cell of claim 1~~ ~~cells that comprise and express a seed-oil suppressing gene under control of a plant-active promoter, wherein said plant exhibits a reduction in seed-oil and a concomitant increase in plant carbohydrate, protein or both and wherein said seed-oil suppressing gene is selected from the group consisting of a mutant allele of a gene naturally occurring in said plant and a transgene.~~

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

Claim 5 (currently amended): A reduced seed-oil content plant of claim ~~4~~ 92, wherein said cotton plant has enhanced fiber yield.

Claim 6 (currently amended): A reduced seed-oil content plant of claim ~~4~~ 4, wherein said seed-oil suppressing gene is a mutant allele of a gene naturally occurring in said plant.

Claim 7 (original): A reduced seed-oil content plant of claim 4, which is an elite cultivar.

Claim 8 (original): A reduced seed-oil content plant of claim 4, which is a primitive cultivar.

Claim 9 (currently amended): A reduced seed-oil content plant of claim ~~4~~ 6, wherein said seed-oil suppressing gene is introduced into the germplasm of said ~~elite cultivar plant~~.

Claim 10 (original): A reduced seed-oil content plant of claim 4, wherein said seed-oil suppressing gene controls seed-oil content by suppressing seed-oil biosynthesis.

Claim 11 (original): A reduced seed-oil content plant of claim 4, wherein said seed-oil suppressing gene controls seed-oil content by suppressing seed-oil storage.

Claim 12 (currently amended): A reduced seed-oil content plant of claim ~~4~~ 6, wherein said seed-oil suppressing gene is generated within the germplasm of said plant by random mutagenesis.

Claim 13 (original): A reduced seed-oil content plant of claim 12, wherein said seed-oil suppressing gene is mutagenized by exposure to ethyl methanesulfonate.

Claim 14 (currently amended): A reduced seed-oil content plant of claim ~~4~~ 6, wherein said seed-oil suppressing gene is identified and isolated from a mutagenized seed stock.

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

Claim 15 (canceled).

Claim 16 (currently amended): A reduced seed-oil content plant of claim 4 6, wherein expression of said seed-oil suppressing gene suppresses a gene selected from the group consisting of carbonic anhydrase, ~~ACCase~~ acetyl-CoA carboxylase (ACCase), lysophosphatidic acid acyltransferase (LPAT), diacylglycerol acyltransferase (DGAT), ~~and oleosin and any combination thereof~~.

Claim 17 (currently amended): A reduced seed-oil content plant of claim 15 99, wherein said seed-oil suppressing ~~gene suppresses genes suppress~~ a gene early in the oil biosynthetic pathway and a gene late in the oil biosynthetic pathway.

Claim 18 (currently amended): A reduced seed-oil content plant of claim 17, wherein said gene that is early in the seed-oil biosynthesis pathway is selected from the group consisting of the ~~CA~~ carbonic anhydrase (AC) gene and the ~~ACCase~~ acetyl-CoA carboxylase (ACCase) gene, and wherein said gene that is late in the seed-oil biosynthesis pathway is selected from the group consisting of the ~~LPAT~~ lysophosphatidic acid acyltransferase (LPAT) gene and the ~~DGAT~~ diacylglycerol acyltransferase (DGAT) gene.

Claim 19 (original): A reduced seed-oil content plant of claim 4, wherein said seed-oil suppressing gene is a transgene.

Claims 20-21 (canceled).

Claim 22 (currently amended): A reduced seed-oil content plant of claim 21 19, wherein expression of said transgene suppresses a gene selected from the group consisting of carbonic

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

anhydrase, ~~ACCase acetyl-CoA carboxylase (ACCase)~~, lysophosphatidic acid acyltransferase, diacylglycerol acyltransferase, ~~and~~ oleosin ~~and any combination thereof~~.

Claim 23 (currently amended): A reduced seed-oil content plant of claim ~~24~~ 101, wherein said ~~transgene suppresses transgenes suppress~~ a gene early in the oil biosynthetic pathway and a gene late in the oil biosynthetic pathway.

Claim 24 (canceled).

Claim 25 (currently amended): A reduced seed-oil content plant of claim ~~24~~ 23, wherein said gene that is early in the seed-oil biosynthesis pathway is selected from the group consisting of the ~~CA~~ carbonic anhydrase (AC) gene and the ~~ACCase acetyl-CoA carboxylase (ACCase)~~ gene, and wherein said gene that is late in the seed-oil biosynthesis pathway is selected from the group consisting of the ~~LPAT~~ lysophosphatidic acid acyltransferase (LPAT) gene and the ~~DGAT~~ diacylglycerol acyltransferase (DGAT) gene.

Claim 26 (currently amended): A reduced seed-oil content plant of claim ~~4~~ 19, wherein said seed-oil suppressing gene is selected from the group consisting of a cosuppression directing nucleic acid, an antisense nucleic acid, a nucleic acid that encodes an immunomodulation protein, a nucleic acid that encodes a ribozyme, a nucleic acid that encodes a transcription factor suppressor and a nucleic acid that encodes an RNAi sequence.

Claim 27 (original): A reduced seed-oil content plant of claim 19, wherein said transgene is operatively linked to a constitutive promoter.

Claim 28 (original): A reduced seed-oil content plant of claim 27, wherein said constitutive promoter is selected from the group consisting of the 35S promoter from cauliflower mosaic virus,

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

the maize ubiquitin promoter, the peanut chlorotic streak caulimovirus promoter, a Chlorella virus methyltransferase gene promoter, the full-length transcript promoter from figwort mosaic virus, the rice actin promoter, pEMU promoter, MAS promoter, the maize H3 histone promoter and an Agrobacterium gene promoter.

Claim 29 (original): A reduced seed-oil content plant of claim 19, wherein said transgene is operatively linked to a seed-specific promoter.

Claim 30 (original): A reduced seed-oil content plant of claim 29, wherein said seed-specific promoter is selected from the group consisting of the cotton alpha-globulin promoter, the napin gene promoter, the soybean alpha-conglycinin gene promoter, the soybean beta-conglycinin gene promoter and the soybean lectin promoter.

Claim 31 (original): A reduced seed-oil content plant of claim 29, wherein said seed-specific promoter is generated by operable linkage of a genetic element that directs seed-specific expression to a core promoter sequence.

Claim 32 (currently amended): A reduced seed-oil content plant of claim 19, wherein said transgene is operatively linked to a promoter that is activated by application of an external exogenous stimulus.

Claim 33 (currently amended): A reduced seed-oil content plant of claim 32, wherein said seed-oil suppressing gene is expressed in the presence of said external exogenous stimulus.

Claim 34 (currently amended): A reduced seed-oil content plant of claim 32, wherein said external exogenous stimulus is copper, a benzenesulfonamide herbicide safener, a glucocorticosteroid hormone, estradiol and ecdysteroidal activity.

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

Claim 35 (currently amended): A reduced seed-oil content plant of claim 32, wherein expression of said seed-oil suppressing gene, after activation, continues to be expressed in the absence of said external exogenous stimulus.

Claim 36 (original): A reduced seed-oil content plant of claim 19, wherein said seed-oil suppressing gene is operably linked to a promoter selected from the group consisting of an inducible promoter and a repressible promoter.

Claim 37 (original): A reduced seed-oil content plant of claim 36, wherein said inducible promoter is selected from the group consisting of the promoter from the ACE1 system, the promoter of the maize Intron 2 gene, the promoter of the Tet repressor from Tn10, the phosphate-deficiency responsive promoter from a phosphate-starvation responsive beta-glucosidase gene from *Arabidopsis*, the synthetic promoter containing a 235bp sulfur deficiency response element from a soybean beta-conglycinin gene linked to a 35S core promoter sequence, the inducible promoter from a steroid hormone gene the transcriptional activity of which is induced by a glucocorticosteroid hormone and XVE.

Claim 38 (canceled).

Claim 39 (currently amended): A reduced seed-oil content plant of claim 38 30, wherein said promoter is the cotton alpha-globulin promoter (AGP).

Claim 40 (currently amended): A reduced seed-oil content plant of claim 35, wherein said plant comprises an excisable blocking sequence that prevents expression of said seed-oil suppressing gene prior to excision of said blocking sequence.

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

Claim 41 (currently amended): A reduced seed-oil content plant of claim 35 4, wherein the seed-oil content of said plant is reduced to a level of 1% to 17% of the fuzzy whole seed weight.

Claim 42 (currently amended): A reduced seed-oil content plant of claim 35 4, wherein stable pools of sucrose are generated in said plant that are available to increase, in a sustained fashion, the production of commercially valuable cellulosic, starch or protein macromolecules.

Claims 43-87 (canceled).

Claim 88 (new): The reduced seed-oil content plant cell of claim 1 further comprising a second seed-oil suppressing gene under control of a plant-active promoter, wherein said second seed-oil suppressing gene is selected from the group consisting of a mutant allele of a gene naturally occurring in said plant and a transgene.

Claim 89 (new): A reduced seed-oil content plant cell of claim 88, which is selected from the group consisting of cotton, corn, soybean, *B. napus*, *B. rapa*, *B. juncea* and wheat.

Claim 90 (new): A reduced seed-oil content plant cell of claim 89, which is a cotton plant cell.

Claim 91 (new): The reduced seed-oil content plant of claim 4, which is selected from the group consisting of cotton, corn, soybean, canola and wheat.

Claim 92 (new): The reduced seed-oil content plant of claim 91, which is a cotton plant.

Claim 93 (new): A reduced seed-oil content plant which comprises cells that comprise and express a first seed-oil suppressing gene under control of a plant-active promoter and a second seed-

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

oil suppressing gene under control of a plant-active promoter, wherein said plant exhibits a reduction in seed-oil and a concomitant increase in plant carbohydrate, protein or both and wherein said first and second seed-oil suppressing genes are selected from the group consisting of a mutant allele of a gene naturally occurring in said plant and a transgene.

Claim 94 (new): The reduced seed-oil content plant of claim 93, which is selected from the group consisting of cotton, corn, soybean, canola and wheat.

Claim 95 (new): The reduced seed-oil content plant of claim 94, which is a cotton plant.

Claim 96 (new): A reduced seed-oil content plant of claim 95, wherein said cotton plant has enhanced fiber yield.

Claim 97 (new): A reduced seed-oil content plant of claim 93, which is an elite cultivar.

Claim 98 (new): A reduced seed-oil content plant of claim 93, which is a primitive cultivar.

Claim 99 (new): A reduced seed-oil content plant of claim 93, wherein each of said seed-oil suppressing genes is a mutant allele of a gene naturally occurring in said plant.

Claim 100 (new): A reduced seed-oil content plant of claim 99, wherein expression of said seed-oil suppressing genes suppress genes selected from the group consisting of carbonic anhydrase, acetyl-CoA carboxylase (ACCase), lysophosphatidic acid acyltransferase (LPAT), diacylglycerol acyltransferase (DGAT), oleosin and any combination thereof.

Claim 101 (new): A reduced seed-oil content plant of claim 93, wherein each of said seed-oil suppressing genes is a transgene.

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

Claim 102 (new): A reduced seed-oil content plant of claim 101, wherein expression of said seed-oil suppressing transgenes suppress genes selected from the group consisting of carbonic anhydrase, acetyl-CoA carboxylase (ACCase), lysophosphatidic acid acyltransferase (LPAT), diacylglycerol acyltransferase (DGAT), oleosin and any combination thereof.

Claim 103 (new): A reduced seed-oil content plant of claim 101, wherein each of said seed-oil suppressing genes is selected from the group consisting of a cosuppression directing nucleic acid, an antisense nucleic acid, a nucleic acid that encodes an immunomodulation protein, a nucleic acid that encodes a ribozyme, a nucleic acid that encodes a transcription factor suppressor and a nucleic acid that encodes an RNAi sequence.

Claim 104 (new): A reduced seed-oil content plant of claim 101, wherein each of said transgenes is operatively linked to a constitutive promoter.

Claim 105 (new): A reduced seed-oil content plant of claim 104, wherein said constitutive promoter is selected from the group consisting of the 35S promoter from cauliflower mosaic virus, the maize ubiquitin promoter, the peanut chlorotic streak caulimovirus promoter, a Chlorella virus methyltransferase gene promoter, the full-length transcript promoter from figwort mosaic virus, the rice actin promoter, pEMU promoter, MAS promoter, the maize H3 histone promoter and an Agrobacterium gene promoter.

Claim 106 (new): A reduced seed-oil content plant of claim 101, wherein each of said transgenes is operatively linked to a seed-specific promoter.

Claim 107 (new): A reduced seed-oil content plant of claim 106, wherein said seed-specific promoter is selected from the group consisting of the cotton alpha-globulin promoter, the napin gene

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

promoter, the soybean alpha-conglycinin gene promoter, the soybean beta-conglycinin gene promoter and the soybean lectin promoter.

Claim 108 (new): A reduced seed-oil content plant of claim 107, wherein said promoter is the cotton alpha-globulin promoter (AGP).

Claim 109 (new): A reduced seed-oil content plant of claim 107, wherein said seed-specific promoter is generated by operable linkage of a genetic element that directs seed-specific expression to a core promoter sequence.

Claim 110 (new): A reduced seed-oil content plant of claim 101, wherein said transgene is operatively linked to a promoter that is activated by application of an exogenous stimulus.

Claim 111 (new): A reduced seed-oil content plant of claim 110, wherein said seed-oil suppressing gene is expressed in the presence of said exogenous stimulus.

Claim 112 (new): A reduced seed-oil content plant of claim 110, wherein said exogenous stimulus is copper, a benzenesulfonamide herbicide safener, a glucocorticosteroid hormone, estradiol and ecdysteroidal activity.

Claim 113 (new): A reduced seed-oil content plant of claim 110, wherein expression of said seed-oil suppressing gene, after activation, continues to be expressed in the absence of said exogenous stimulus.

Claim 114 (new): A reduced seed-oil content plant of claim 101, wherein each of said seed-oil suppressing genes is operably linked to a promoter selected from the group consisting of an inducible promoter and a repressible promoter.

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

Claim 115 (new): A reduced seed-oil content plant of claim 114, wherein said inducible promoter is selected from the group consisting of the promoter from the ACE1 system, the promoter of the maize Intron 2 gene, the promoter of the Tet repressor from Tn10, the phosphate-deficiency responsive promoter from a phosphate-starvation responsive beta-glucosidase gene from *Arabidopsis*, the synthetic promoter containing a 235bp sulfur deficiency response element from a soybean beta-conglycinin gene linked to a 35S core promoter sequence, the inducible promoter from a steroid hormone gene the transcriptional activity of which is induced by a glucocorticosteroid hormone and XVE.

Claim 116 (new): A reduced seed-oil content plant of claim 113, wherein said plant comprises excisable blocking sequences that prevents expression of each of said seed-oil suppressing genes prior to excision of said blocking sequences.

Claim 117 (new): A reduced seed-oil content plant of claim 93, wherein the seed-oil content of said plant is reduced to a level of 1% to 17% of the fuzzy whole seed weight.

Claim 118 (new): A reduced seed-oil content plant of claim 93, wherein stable pools of sucrose are generated in said plant that are available to increase, in a sustained fashion, the production of commercially valuable cellulosic, starch or protein macromolecules.

Claim 119 (new): A reduced seed-oil content plant of claim 6, wherein the seed-oil content of said plant is reduced to a level of 1% to 17% of the fuzzy whole seed weight.

Claim 120 (new): A reduced seed-oil content plant of claim 6, wherein stable pools of sucrose are generated in said plant that are available to increase, in a sustained fashion, the production of commercially valuable cellulosic, starch or protein macromolecules.

Application Serial No. 10/647,140  
Amendment dated 12 February 2007  
Reply to Office Action mailed 10 August 2006

Claim 121 (new): A reduced seed-oil content plant of claim 99, wherein the seed-oil content of said plant is reduced to a level of 1% to 17% of the fuzzy whole seed weight.

Claim 122 (new): A reduced seed-oil content plant of claim 99, wherein stable pools of sucrose are generated in said plant that are available to increase, in a sustained fashion, the production of commercially valuable cellulosic, starch or protein macromolecules.

Claim 123 (new): A reduced seed-oil content plant of claim 101, wherein the seed-oil content of said plant is reduced to a level of 1% to 17% of the fuzzy whole seed weight.

Claim 124 (new): A reduced seed-oil content plant of claim 101, wherein stable pools of sucrose are generated in said plant that are available to increase, in a sustained fashion, the production of commercially valuable cellulosic, starch or protein macromolecules.